



## OPEN ACCESS

EDITED AND REVIEWED BY  
Sophia George,  
University of Miami, United States

\*CORRESPONDENCE  
Angélica Nogueira-Rodrigues  
✉ angelica.onco@uol.com.br

RECEIVED 22 May 2023  
ACCEPTED 19 October 2023  
PUBLISHED 08 May 2024

CITATION  
Nogueira-Rodrigues A, Cetina Perez L and  
Maza M (2024) Editorial: Cervical cancer  
control in Latin America and the Caribbean.  
*Front. Oncol.* 13:1226915.  
doi: 10.3389/fonc.2023.1226915

COPYRIGHT  
© 2024 Nogueira-Rodrigues, Cetina Perez  
and Maza. This is an open-access article  
distributed under the terms of the [Creative  
Commons Attribution License \(CC BY\)](#). The  
use, distribution or reproduction in other  
forums is permitted, provided the original  
author(s) and the copyright owner(s) are  
credited and that the original publication in  
this journal is cited, in accordance with  
accepted academic practice. No use,  
distribution or reproduction is permitted  
which does not comply with these terms.

# Editorial: Cervical cancer control in Latin America and the Caribbean

Angélica Nogueira-Rodrigues<sup>1\*</sup>, Lucely Cetina Perez<sup>2</sup>  
and Mauricio Maza<sup>3</sup>

<sup>1</sup>Department of General Medicine, Federal University of Minas Gerais, Belo Horizonte, Brazil,  
<sup>2</sup>Department of Clinical Research, Instituto Nacional de Cancerologia, National Cancer Institute,  
Mexico City, Mexico, <sup>3</sup>Pan American Health Organization, Washington, DC, United States

## KEYWORDS

cervical cancer 1, Latin America, epidemiology, prevention, screening, treatment, elimination

**Editorial on the Research Topic:**

[Cervical cancer control in Latin America and the Caribbean](#)

Worldwide, more than half a million women are diagnosed with cervical cancer (CC) annually, and over 300,000 die from the disease. Low- and middle-income countries (LMICs) account for around 85%, almost 10% of them in Latin America (LATAM) and the Caribbean, where mortality rates are almost five times higher than in high-income countries (HICs) (1, 2).

The long natural history of HPV-carcinogenesis provides a window of opportunity for secondary prevention with screening tests, which identify women infected with HPV or with cytologic abnormalities indicative of precancerous lesions. These lesions can be successfully controlled with early treatment (3). The existence of a primary infectious etiologic agent allows for primary prevention with prophylactic HPV vaccines capable of reducing the incidence of causative infections. Thus, cervical cancer is considered a preventable and treatable disease, despite the fact it continues to be the third highest cause of cancer in women in the region (3).

In May 2018, the World Health Organization (WHO) made a call to action for the global elimination of the disease as a public health problem. Elimination would occur when incidence rates scale down to less than 4 cases/100,000 women and would be possible through a strategy comprising three goals to be achieved by 2030: 90% HPV vaccination coverage of girls by 15 years of age, 70% screening coverage with high-performance tests of women by ages 35 and 45, and adequate management and treatment of 90% of precancerous lesions and invasive cancers (4). According to the WHO's predictions, in LMICs and in most countries of Latin America, CC elimination is possible in the long term but will depend heavily on achieving the target for vaccination coverage (5, 6).

The main objectives of this Research Topic, comprised of nine articles, are to outline the most recent strategies to control CC in the sovereign states of LATAM, to present obstacles to disease control in the region, and to discuss ideas to overcome them.

Starting from vaccination, the advent of HPV prophylactic vaccination offers a potential large step towards control of CC and other HPV-related cancers. Based on the high incidence of HPV-related cancers, the strong carcinogenic potential of certain HPV strains, and numerous trials proving the high efficacy of vaccines, immunization is considered one of the most important tools to alter the incidence of HPV-associated cancers in LMICs globally (7, 8). However, this Research Topic brings data to alert that HPV vaccine uptake in LATAM has been lower than expected. In the article from [Nogueira-Rodrigues et al.](#), a significant decline in its adhesion is reported, and several reasons are probably involved including limited knowledge of HPV and the HPV vaccine, misguided safety concerns, high cost, cultural barriers, and the COVID-19 pandemic. The authors present strategies to overcome the main barriers, such as adopting the one- dose schedule, delivering the vaccine to both health centers and schools, and advising health professionals to formally prescribe the vaccine.

Switching gears to screening strategies, in high-income countries, following the introduction of and adherence to Papanicolaou's smear test in the 1940s, CC incidence declined by more than 60%, confirming this test as the most effective cancer screening tool in the history of medicine. However, the PAP smear has achieved limited success in LMICs due to several reasons, mainly lack of organized screening programs within weak health systems, technique limitations, low population coverage and not sufficiently reaching the high-risk population group, poor quality control, and insufficient monitoring (7). Furthermore, this dismal scenario has been significantly impacted by the COVID-19 pandemic with further declines at all levels of CC prevention and increasing inequalities, as reported by [Cruz-Valdez et al.](#)

In concordance with the WHO's call for best practices to eliminate CC (4), the feasibility of self-collection of samples for high-risk HPV is currently being tested in several countries across the LATAM region, and a systematic review of the topic is presented in the Research Topic by [Dartibale et al.](#) HPV self-sampling is a promising strategy to overcome barriers to CC screening in areas with well-established screening programs, but may also reach those without organized screening and special populations such as indigenous, rural, and transgender women. Strategies to develop a concerted effort at local, regional, and national levels to support capacity building in reporting, monitoring, and surveilling, as well as strategies to comprehend and overcome cultural barriers for self-screening acceptance is shared by [Mitchell et al.](#), [McFarlane et al.](#), and [Urrutia and Padilla.](#)

Regarding treatment challenges, most CC patients in the region are diagnosed with locally advanced disease (9) and, since the late 1990s when a spate of US studies reported the benefit of cisplatin-based chemoradiation for CC, there has been a dearth of clinical advances in this setting and the cure rates of locally advanced

disease have reached a plateau (10–13). Furthermore, efforts to increase disease control with additional chemotherapy have not been clearly positive so far (13–15). A systematic review and meta-analysis on concurrent chemoradiotherapy followed by adjuvant chemotherapy is presented in the Research Topic by [Liu et al.](#) [Arango-Bravo et al.](#) highlight a shortage in several aspects of CC treatment, including oncologists, chemotherapy units, and radiotherapy facilities, and that Mexico is an upper middle-income country. To conclude, [Maluf et al.](#) make recommendations for the prevention, screening, diagnosis, staging, and management of CC in areas with limited resources based on an International Gynecological Cancer Society (IGCS) consensus meeting, defending that the development of guidelines by health care providers from LMI regions is more reflective of the reality on the ground.

Cervical cancer continues to be a public health challenge in LATAM and immediate coordinated efforts are urgently needed to best use the existing tools to control the disease. Given that HPV-associated tumors arise years, if not decades, after initial infection and that existing vaccines have no therapeutic efficacy on pre-existing CC (7), further delays to implement high- coverage HPV vaccination programs coupled with improvements in screening strategies will only mean continued loss of life from a preventable disease and undue financial burden on already constrained health systems.

## Author contributions

All authors contributed to conceptualization, data curation, formal analysis, validation, visualization; writing – original draft; writing – review & editing. All authors contributed to the article and approved the submitted version.

## Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

## Publisher's note

All claims expressed in this article are solely those of the authors and do not necessarily represent those of their affiliated organizations, or those of the publisher, the editors and the reviewers. Any product that may be evaluated in this article, or claim that may be made by its manufacturer, is not guaranteed or endorsed by the publisher.

## References

1. Bychkovsky BL, Ferreyra ME, Strasser-Weippl K, Herold CI, de Lima Lopes G Jr, Dizon DS, et al. Cervical cancer control in Latin America: A call to action. *Cancer*. (2016) 122(4):502–14.
2. Capote Negrin LG. Epidemiology of cervical cancer in Latin America. *Ecantermedicalscience*. (2015) 9:577. doi: 10.3332/ecancer.2015.577
3. Schiffman M, Castle PE, Jeronimo J. Human papillomavirus and cervical cancer. *Lancet*. (2007) 370 890 907.
4. WHO. *Global strategy to accelerate elimination cervical Cancer as Public Health problem*. <https://www.who.int/publications-detail-redirect/9789240014107>.
5. Brisson M, Kim JJ, Canfell K, Drolet M, Gingras G, Burger EA, et al. Impact of HPV vaccination and cervical screening on cervical cancer elimination: A comparative modelling analysis in 78 low-income and lower-middle-income countries. *Lancet*. (2020) 395(10224):575–90. doi: 10.1016/S0140-6736(20)30068-4
6. Canfell K, Kim JJ, Brisson M, Keane A, Simms KT, Caruana M, et al. Mortality impact of achieving WHO cervical cancer elimination targets: A comparative modelling analysis in 78 low-income and lower-middle-income countries. *Lancet*. (2020) 395(10224):591–603. doi: 10.1016/S0140-6736(20)30157-4
7. Nogueira-Rodrigues A, Bukowski A, Paulino E, St Louis J, Barrichello A, Sternberg C, et al. An alert to Latin America: Current human papillomavirus vaccination trends highlight key barriers to successful implementation. *Cancer*. (2017) 123:2193–9. doi: 10.1002/cncr.30647
8. *Hum papillomavirus (HPV) vaccination coverage*. <https://immunizationdata.who.int/pages/coverage/hpv.html>.
9. Longatto-Filho A, Erzen M, Branca M, Roteli-Martins C, Naud P, Derchain SF, et al. Human papillomavirus testing as an optional screening tool in low-resource settings of Latin America: experience from the Latin American Screening study. *Int J Gynecol Cancer*. (2006) 16(3):955–62.
10. Paulino E, de Melo AC, Silva-Filho AL, Maciel LF, Thuler LCS, Goss P, et al. Panorama of gynecologic cancer in Brazil. *JCO Glob Oncol*. (2020) 6:1617–630. doi: 10.1200/JCO.20.00099
11. Rose PG, Bundy BN, Watkins EB, et al. Concurrent cisplatin based chemoradiation improves progression free and overall survival in an advanced cervical cancer: Results of a randomized Gynecologic Oncology Group Study. *N Engl J Med*. (1999) 340:1144–53.
12. Peters WA III, Liu PY, Barret RJ, et al. Cisplatin and 5-fluorouracil plus radiation therapy are superior to radiation therapy as adjunctive in high-risk early stage carcinoma of the cervix after radical hysterectomy and pelvic lymphadenectomy: Report of a phase III intergroup study. *J Clin Oncol*. (2000) 18:1606–13.
13. Whitney CW, Sause W, Bundy BN, et al. A randomized comparison of fluorouracil plus cisplatin versus hydroxyurea as an adjunct to radiation therapy in stages IIB- IVA carcinoma of the cervix with negative para-aortic lymph nodes: A Gynecology Oncology Group and Southwest Oncology Group Study. *J Clin Oncol*. (1999) 17:1339–48.
14. Dueñas-González A, Zarbá JJ, Patel F, et al. Phase III, open-label, randomized study comparing concurrent gemcitabine plus cisplatin and radiation followed by adjuvant gemcitabine and cisplatin versus concurrent cisplatin and radiation in patients with stage IIb to IVa carcinoma of the cervix. *J Clin Oncol*. (2011) 29:1678–85.
15. Mileskin LR, Moore KN, Barnes E, GebSKI V, Narayan K, Bradshaw N, et al. Adjuvant chemotherapy following chemoradiation as primary treatment for locally advanced cervical cancer compared to chemoradiation alone: The randomized phase III OUTBACK Trial (ANZGOG 0902, RTOG 1174, NRG 0274) J. *Clin Oncol*. (2021) 39 ((Suppl. S18):LBA3. doi: 10.1200/JCO.2021.39.15\_suppl.LBA3